

## **SECTION 13288 – TESTING/AIR MONITORING**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. This Section specifies the Contractor's Responsibilities for personnel monitoring and record keeping.
  
- B. This Section specifies project air monitoring and inspectional services for the purposes of:
  - 1. Verifying compliance with SECTION 13282 – LEAD-CONTAINING PAINT CONTROL MEASURES, SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS, and SECTION 13286 – REMOVAL AND DISPOSAL OF ARSENIC CONTAINING MATERIALS.
  
  - 2. Ensuring that the Contracting Officer's legally required documentation is collected.
  
  - 3. Providing engineering control during the project.

#### **1.02 REFERENCES**

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only, and include but are not limited to, the following:
  
- B. CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1926.21	Safety Training and Education
29 CFR 1926.33	Access to Employee Exposure and Medical Record
29 CFR 1926.59	Hazard Communication
29 CFR 1926.62	Lead Exposure in Construction
29 CFR 1926.65	Hazard Waste Operations and Emergency Response
29 CFR 1926.103	Respiratory Protection
29 CFR 1926.51	Sanitation
29 CFR 1926.200	Accident Prevention Signs and Tags
29 CFR 1926.59	Hazard Communication
29 CFR 1926.1101	Asbestos, Tremolite, Anthophyllite, Actinolite
29 CFR 1910. 134	Respiratory Protection
40 CFR 61-SUBPART A	General Provisions
40 CFR 61-SUBPART M	National Emission Standard for Asbestos
40 CFR 763	Asbestos Containing Material in Schools
40 CFR 260	Hazardous Waste Management Systems: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restriction
40 CFR 745	Lead; Requirement for Lead-Based Paint Activities
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

C. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 560/5-85-024 Guidance for Controlling ACM in Buildings

D. HAWAII OCCUPATIONAL SAFETY AND HEALTH (HIOSH)

12-114.2	Personal Protective Equipment
12-121.2	Fall Protection
12-122.2	Materials Handling, Storage, Use, and Disposal
12-145.1	Asbestos
12-148.1	Lead
12-151	Hazardous Waste Operations and Emergency Response
12-206-13	Asbestos

E. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing

F. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	(1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z88.2	(1992) Respiratory Protection

G. UNDERWRITERS LABORATORIES INC. (UL)

UL 586	(1990) High-Efficiency, Particulate, Air Filter Units
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**1.03 DEFINITIONS**

- A. Action Level (AL) - Lead: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period.
- B. AL- Arsenic: Employee exposure averaged over an 8-hour period, without regard to the use of respirators, to a particular airborne concentration. OSHA requirements become effective at this level. AL for Arsenic: 5 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ )
- C. Area Sampling: Sampling of concentrations which is representative of the airborne concentrations but is not collected in the breathing zone of personnel (approximately 1.5 to 1.8 meters above the floor).

- D. Background: The ambient airborne asbestos concentration in an uncontaminated area as measured prior to any asbestos hazard abatement efforts. Background concentrations for other (contaminated) areas are measured in similar but asbestos free locations.
- E. Competent Person - Lead: Refers to a person employed by the Contractor who is trained in the recognition and control of lead hazards in accordance with current federal, State, and local regulations, has the authority to take prompt corrective actions to control the lead hazards and is an EPA certified lead inspector or risk assessor.
- F. Competent Person - Arsenic: Refers to a person employed by the Contractor who is trained in the recognition and control of arsenic hazards in accordance with current federal, State, and local regulations, has the authority to take prompt corrective actions to control the arsenic hazards.
- G. Monitoring Specialist: A person who performs air monitoring and inspections during the disturbance of hazardous materials under the direction of the Contracting Officer's authorized representative.
- H. Permissible Exposure Limit (PEL) - Lead: 50 micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more or less than 8 hours in a work day, the PEL shall be determined by the following formula:

$$\text{PEL (micrograms per cubic meter of air)} = 400/\# \text{ hours worked per day}$$

- I. Personal Sampling: Air sampling which is performed to determine concentrations within the breathing zone of a specific employee. Samples shall be representative of the employees work tasks. The breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.
- J. Qualified Testing Laboratory – Lead:
  1. Environmental and Work Area Monitoring Laboratory – The testing laboratory employed by the Contracting Officer's authorized representative to perform analysis of environmental and work area air monitoring samples and report concentrations of airborne lead.

The laboratory shall be accredited under the EPA's National Lead Laboratory Accreditation Program (NLLAP) by the American Industrial Hygiene Association's (AIHA's) Environmental Lead Laboratory Accreditation Program (ELLAP) and successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program for each lead matrix analyzed by the laboratory. The laboratory shall fulfill all requirements of accreditation for analyzing lead in air. Laboratory personnel performing the work shall have been judged proficient in the analysis of lead in the applicable parameter by successful participation within the last year in AIHA's ELPAT.

2. Personal Air Monitoring Laboratory – The testing laboratory utilized by the air monitoring firm retained by the Contractor to perform analysis of personal air monitoring samples and report airborne concentrations of lead. Collection of

the Contractor's OSHA personal air samples will be performed by a firm independent of the Contractor, at the Contractor's expense.

The laboratory shall be accredited under the EPA's National Lead Laboratory Accreditation Program (NLLAP) by the American Industrial Hygiene Association's (AIHA's) Environmental Lead Laboratory Accreditation Program (ELLAP) and successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program for each lead matrix analyzed by the laboratory. The laboratory shall fulfill all requirements of accreditation for analyzing lead in air. Laboratory personnel performing the work shall have been judged proficient in the analysis of lead in air by successful participation within the last year in AIHA's ELPAT.

3. Toxicity Characteristic Leaching Procedure (TCLP) Testing Laboratory - The testing laboratory employed by the Contractor to perform TCLP tests of a representative sample of the debris waste stream of each structure and of any lead-contaminated chips or debris generated through abatement to determine whether or not the waste is hazardous or non-hazardous. The laboratory shall be experienced in and analyze TCLP samples using the EPA Method 1311/6010.
  
- K. In addition, Definitions as outlined in SECTION 13282 – LEAD-CONTAINING PAINT CONTROL MEASURES, SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS, and SECTION 13286 – REMOVAL AND DISPOSAL OF ARSENIC CONTAINING MATERIALS.

#### **1.04 ABBREVIATIONS**

- A. ANSI: American National Standards Institute, Inc.
  
- B. CFR: Code of Federal Regulations
  
- C. HIOSH: Division of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii
  
- D. EPA: U.S. Environmental Protection Agency
  
- E. NESHAP: National Emission Standards for Hazardous Air Pollutants
  
- F. NIOSH: National Institute for Occupational Safety and Health
  
- G. OSHA: Occupational Safety and Health Administration
  
- H. The State: The State of Hawaii

#### **1.05 COORDINATION**

- A. The Contractor shall coordinate with the Contracting Officer's authorized representative for the testing/air monitoring requirements included in these specifications for testing/air monitoring consultants or inspectors and all applicable Federal, State and local regulations.

#### **1.06 PRE-CONSTRUCTION CONFERENCE**

- A. A conference shall be held prior to construction and shall be conducted by the Contracting Officer assisted by the Contracting Officer's authorized representative.
- B. Attendance: The Contractor, Project Designer, Contracting Officer's authorized representative, industrial hygienist, and air monitoring personnel shall also attend.
- C. Agenda:
  - 1. Review final schedule for project.
  - 2. Verify legal requirements and special conditions
  - 3. Verify compliance with pre-construction requirement
  - 4. Obtain copies of all mandatory notifications.
  - 5. Inspect sample respiratory equipment and other abatement equipment.
  - 6. Review procedures and responsibilities.
  - 7. Clarify the scope of work and its best impact on the users of the building.

#### **1.07 DESCRIPTION OF WORK**

- A. Furnish all labor, materials, and equipment necessary to carry out the personnel monitoring, record keeping, air monitoring and inspectional services in compliance with all applicable Federal, State and Local laws and regulations during the performance of the Project.

#### **1.08 SUBMITTALS**

- A. As specified in SECTION 13282 – LEAD-CONTAINING PAINT CONTROL MEASURES, SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING LAMPS, and SECTION 13286 – REMOVAL AND DISPOSAL OF ARSENIC CONTAINING MATERIALS.

#### **1.09 REQUIREMENTS**

- A. The Contractor shall comply with the above requirements and any applicable Federal, State and local regulations. Where there is any conflict or inconsistency among requirements, the more stringent requirement shall apply. Ignorance of the above requirements and any applicable State and County Regulation resulting in additional cost to the Contractor shall not be reimbursable or billable to the State.
- B. All regulations shall govern over these Specifications, except when the Specification is providing greater protection against hazardous materials exposure, injury, loss or liability. Any question regarding conflict or inconsistency between Specification and/or regulations should be directed to the authorized representative of the Contracting Officer.

- C. Whenever approval of the authorized representative of the Contracting Officer is required prior to proceeding with other work, the Contractor shall comply with the following:
1. The Contractor shall give, at a minimum, five (5) days notification to the authorized representative of the Contracting Officer prior to the start of any work.
  2. The Contractor shall not begin any work without the authorized representative of the Contracting Officer present onsite.
  3. The Contractor shall allow the authorized representative of the Contracting Officer 24 hours from notification to respond to the request for site inspection(s).
  4. The Contractor shall designate one person (either a foreman or superintendent) who will be authorized to request inspections. The name of the designated person shall be submitted in writing to the authorized representative of the Contracting Officer prior to commencing work. Requests from any other person will not be considered official requests.
  5. The designated person requesting an inspection shall provide the following information:
    - a. Name of caller.
    - b. Building and rooms to be inspected.
    - c. Work phase of inspection, as specified.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **3.01 AIR SAMPLING - ARSENIC**

- A. Sampling for airborne concentrations of asbestos fibers shall be performed by the authorized representative of the Contracting Officer. Sampling of airborne concentrations of arsenic dust shall be performed as specified herein. Unless otherwise specified, NIOSH Method 7300 will be followed for all sampling and analysis.
1. Sampling Prior to Arsenic Work: Baseline air sampling may be conducted by the authorized representative of the Contracting Officer one-day prior to the masking and sealing operations for each removal site.
  2. Sampling During Arsenic Work: The performance and execution of the Contractor's work shall be closely and continuously monitored by the authorized representative of the Contracting Officer. Air monitoring and inspection by the authorized representative of the Contracting Officer shall be performed in the work area surroundings and in any occupied adjacent buildings to ensure full compliance with the Specification and all applicable regulations. The Contractor shall provide full cooperation and support to the authorized representative of the Contracting Officer and to their technicians throughout the work.

Visual Clearance will be conducted by the Contracting Officer's authorized representative after the visual inspection has been passed the Contractor shall remove all signs, temporary barriers and materials when their use is no longer required.

- B. Air Monitoring With Respect To Contractor's Employees
  - 1. The Contractor shall be responsible for all personal air monitoring as required by OSHA regulations. All personal air monitoring will be conducted by an agent of the Contractor who is currently certified by the Hawaii Department of Health to conduct personal air sampling.
  - 2. The Contractor shall provide own personal sampling of 25% of his workers or minimum of two workers, whichever is greater as indicated in 29 CFR 1926.1101 and governing environmental regulations.
  - 3. Laboratory performing analysis shall be an independent party, not financially or managerially connected with the Contractor. Laboratory shall also be approved by the Contracting Officer's authorized representative and AIHA accredited in the type of analysis being performed.
  - 4. At the conclusion of each day's sampling, copies of all air monitoring records shall be provided to the authorized representative of the Contracting Officer.
  - 5. Results of sample analysis shall be provided to the authorized representative of the Contracting Officer within forty-eight (48) hours of collection.
- C. All other air sampling for compliance with the Specification shall be performed by the authorized representative of the Contracting Officer.

### **3.02 AIR SAMPLING – LEAD**

- A. Environmental and work area air monitoring of airborne lead concentrations shall be performed by the Contracting Officer's authorized representative in accordance with 29 CFR 1926.62 and as specified herein.
  - 1. Sampling Prior to Lead Work: The Contracting Officer's authorized representative may collect area air samples outside the work area prior to the start of work in order to establish the background level of lead in the air. The samples shall be analyzed by the Environmental and Work Area Monitoring Laboratory for the airborne concentration of lead. This concentration shall be the background level.
  - 2. Sampling During Lead Work: The Contracting Officer's authorized representative shall perform area air monitoring during the entire renovation operation. The Contractor shall allow access to the work area and assist the authorized representative as needed.
    - a. Sufficient area air monitoring shall be conducted at the border of the lead control area to ensure unprotected personnel are not exposed to lead concentrations above 30 micrograms per cubic meter of air at all times. As a minimum, conduct area monitoring in areas immediately adjacent to the lead control area daily during each shift in which renovation operations are performed. At least one sample on each shift shall be taken on the downwind side of the lead control area.

- b. If the outside boundary of the lead control area is determined to have air lead levels above the background levels the Contractor shall be required to adequately correct the conditions causing the increased lead levels. Any work necessary to correct the condition will be completed by the Contractor at no additional cost to the State.
  - c. If the outside boundary of the lead control area is determined to have air lead levels at or above 30 micrograms per cubic meter of air, the Contractor shall immediately stop work and correct the conditions causing the increased level.
  - d. Work shall resume only when approval is given by the Contracting Officer's authorized representative.
- B. Air Monitoring With Respect To Contractor's Employees
- 1. The Contractor's Competent Person shall perform initial personal air monitoring to determine employee exposure during renovation work. During initial personal monitoring, the first two full days of work (two 8-hour work shifts), and until results of the personal air monitoring tests show airborne lead concentrations below the action level, all workers shall be provided with a minimum of air-purifying half-mask respirators and disposable protective clothing.
  - 2. Personal monitoring samples shall be taken on at least 25 % of the employees or a minimum of 2 employees, whichever is greater, or a representative sample of employees with the greatest potential for exposure as determined by the Contracting Officer's authorized representative during each work shift.
  - 3. At the end of the period of initial determination all results shall be submitted to a laboratory for analysis by NIOSH Method 7082.
  - 4. Results from the first two full days (two 8-hour work shifts) of initial air monitoring, signed by the testing lab employee performing the analysis and the Competent Person, shall be provided to the Contracting Officer's authorized representative within 48 hours after completion of sampling. Results of initial air monitoring shall be used by the Contractor's Competent Person to determine appropriate worker protection requirements for similar work activities. Determination shall be submitted to Contracting Officer's authorized representative within 48 hours.
  - 5. If the personal air monitoring tests covering a period of two full work days (two 8-hour work shifts) show airborne lead concentrations below the action level, the Contractor's Competent Person may determine that the use of HEPA-filtered air purifying respirators is not required. Other elements of protective clothing shall continue to be worn throughout the renovation operation.
  - 6. If exposure to lead at or in excess of 30 micrograms per cubic meter of air as an 8-hour time weighted average is indicated, the Contractor's Competent Person will immediately notify the Contractor and Contracting Officer's authorized representative. The Contractor will provide and require all persons



exposed to this concentration of airborne lead dust to wear, at a minimum, half mask air purifying respirators with HEPA filters. In addition, the Contractor's work procedures will be immediately reviewed by the Contracting Officer's authorized representative and the Contractor and modifications in the Contractor's work performance shall be implemented to lower the concentration of airborne lead.

7. Results of air monitoring shall be submitted to the Contracting Officer's authorized representative within 48 hours of collection, signed by the testing lab employee who performed the analysis and the Competent Person.

### **3.03 LEAD WASTE CHARACTERIZATION**

- A. TCLP testing of the gross solid lead renovation debris shall be performed by the Contractor to characterize the debris as either non-hazardous or hazardous waste. Metal items to be demolished and removed shall be recycled.
- B. The Contractor shall not concentrate, treat, or inter-mix wastes from outside this project with the debris and wastes generated by this project.
- C. For lead-containing paint wastes generated by renovation operations, including used disposal PPE, lead paint chips and waste from paint stripping operations, TCLP testing of the waste shall be provided and paid for by the Contractor as specified herein.
- D. All TCLP test samples shall be collected by the Contractor in accordance with SW 846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods."
- E. All TCLP test samples shall be analyzed for lead concentration using EPA Method 1311/6010 by the TCLP Testing Laboratory.
- F. Submit results of TCLP tests to the Contracting Officer's authorized representative within 3 working days of collection, signed by the testing lab employee performing the analysis and the Contractor's Competent Person.

### **3.04 PAYMENT**

- A. Payment for abatement monitoring shall be included in the lump sum bid. The final payment will not be made until proper documentation of the disposal of hazardous waste is submitted.

END OF SECTION